DOCUMENT RESUME

ED 384 511 SE 056 420

AUTHOR Rigsby, Michael, Ed.; Tooker, Lisa, Ed.
TITLE [Proceeding and Abstracts of the 1994 National Marine Educators Association Conference.]
INSTITUTION National Marine Educators Association, Baltimore, MD.
PUB DATE 94
NOTE 14p.
PUB TYPE Speeches/Conference Papers (150) -- Collected Works - Serials (022)
JOURNAL CIT NMEA News; v10 n1 Spr 1994

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Abstracts; Elementary Secondary Education; Environmental Education; *Marine Biology; *Marine Education; Program Descriptions; Water Pollution; Workshops
IDENTIFIERS *Environmental Education Programs

ABSTRACT

This bulletin contains the proceedings and 54 abstracts for symposia, workshops and contributed papers of the 1994 National Marine Educators Association Conference (Knoxville, Tennessee, August 8-11, 1994). Some of the topics covered in conference abstracts include: (1) elementary physical, chemical, and biological labs and curriculum; (2) infusing marine research into the classroom; (3) marine and aquatic science programs for students and adults; (4) a school-wide, interdisciplinary ocean studies program; (5) simulations for high school or college students that focus on marine resources, economics, and group problem solving; (6) marine and environmental education for minorities and women; (7) coastal hard bottoms; (8) the issues and importance of global change; (9) writing for publication in marine science and maritime studies; and (1) marine education. (LZ)

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ED 384 511

PROCEEDINGS AND ABSTRACTS

OF THE

1994 NATIONAL MARINE EDUCATORS ASSOCIATION CONFERENCE

U.S. DEPARTMENT OF EDUCATION
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NMEA news

Newsletter of the National Marine Educators Association

Volume 10 No. 1 Spring 1994

1994 CONFERENCE BULLETIN

This year, NMEA's annual conference is being held in conjunction with the American Institute of Biological Sciences (AIBS). This has led to changes in our normal registration procedures. Registration materials have been sent to NMEA members directly from AIBS. Conference chair Valerie Chase has provided answers to questions you may have about the conference.

Where are my registration materials?

In late April, AIBS mailed a red, white and blue registration brochure to all NMEA members. NMEA's name was listed among those of several other societies, so you may not have noticed it. *If you need to receive another copy of the registration packet, call Valerie Chase at (410) 576-3887 or fax your request to (410) 659-0116.* Please be sure to provide your name and address.

Why aren't any NMEA sessions listed?

NMEA sessions will be listed in a program mailed to folks who have registered for the AIBS conference. Only two NMEA events require pre-registration: the Auction and the Mr. and Mrs. Fish Show ($6 for food) and the evening at the Tennessee Aquarium ($43 with bus ride). They are field trips No. 29 and 30 in the brochure. Be sure to pre-register for the auction and dinner at the aquarium. On-site is too late. You may also sign up for other field trips. Sessions are open to all. NMEA will have three days (Monday-Wednesday) of concurrent sessions ranging from 20-minute papers to 4-hour workshops. Thursday morning is free for you to go to other sessions or explore local attractions like the zoo and science center. Sea Grant folks have a meeting Thursday morning. Thursday afternoon, we'll visit the Tennessee Aquarium in Chattanooga.

Why ride the bus to the aquarium?

If you are heading home to the south, you may want to check-out of the dorms, drive to Chattanooga, then continue on from there. Otherwise, take the bus, unless you are ready for a 2-hour, night drive back to the dorms on a road that may still be under construction.

Don't teachers pay half price?

If you are a full-time K-12 classroom teacher, register as a graduate student and include a note on school letterhead giving your school name, district and subject(s) taught. The half-price special for teachers and students means others subsidize their costs: please do not abuse this courtesy.

How will I find NMEA folks?

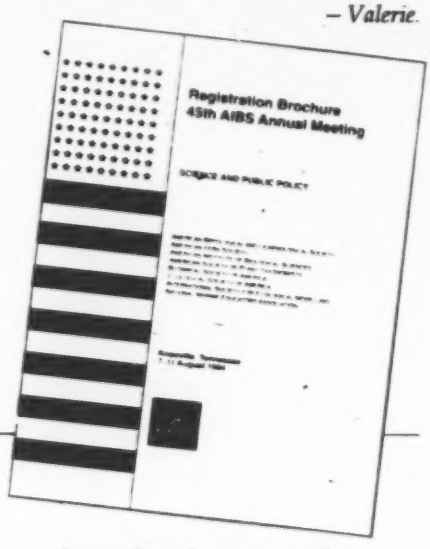
All NMEA sessions are in the University of Tennessee Conference Center. List your NMEA affiliation on your registration and your badge will have NMEA on it. In addition to sessions, NMEA will have an office where you can meet folks. Monday evening, we'll have a giant Sea Swap and sharing session where you can meet others.

How were the talks scheduled?

I tried to make sets of things which had common themes. Some things did not fit easily together. I let the symposia set some of the themes: Bridging the Gap (Monday), Achieving Diversity (Tuesday) and Global Change (Wednesday).

Hope this helps. See you in Knoxville,

– Valerie.



INSIDE

Look inside this issue of *NMEA news* for abstracts for NMEA symposia, workshops and contributed papers. And remember, NMEA members can also attend all the AIBS sessions at this year's joint conference.

NMEA 1994 Annual Conference Abstracts

PLACE

University of Tennessee and the Knoxville Convention Center. NMEA conference headquarters will be in the Convention Center in Meeting Room 9.

Saturday, August 6, afternoon

NMEA Board long-range planning meeting.

Sunday, August 7

NMEA board meeting

Monday, August 8, morning

WORKSHOP: *Saving the Sea: How Teachers and Scientists Can Contribute to Marine Conservation in the Classroom From Middle Schools to Colleges.*

Alison D. Merow. Center for Marine Conservation, Washington, DC 20036 (202/429-5609).

A demonstration of activities and a discussion of marine policy and how to affect it. Topics covered include marine pollution, marine sanctuaries, fishery management and the Marine Mammal Protection Act. Featured publications: *Sanctuary Games, Save our Seas Curriculum, Fish for the Future: A Citizen's Guide* and *The Incidental Capture of Marine Mammals.* Come play Sanctuary Bingo, the Feeding Game, and learn how to translate Government Speak. Take away lots of materials.

WORKSHOP: *The Marine Environment and You: Reflections of Human Impacts on the Marine World with Elementary Physical, Chemical and Biological Labs, Curriculum and Sharing.* ***Donna Dione, Lisa Facciponti, Amy Meyer, Katrina Barrett and Cathi Delisle.*** *Mystic Marinelife Aquarium, Mystic, CT 06355 (203/572-5955).*

Incorporated in the workshop will be "Let's Get Physical," a lab looking at the physical and chemical properties of water. The dynamics of marine communities, the niches available, and the physical and behavioral adaptations of marine organisms will be examined using felt boards, shadow plays and creativity. How do humans impact this world? Our time together will conclude with discussion and activities in our effort to answer this question.

SYMPOSIUM: Bridging the Gap—Infusing Marine Research into the Classroom. Organized by: **John Dindo,** *Dauphin Island Sea Lab, Box 369, Dauphin Island, AL 36528 (205/861-2141).*

John Dindo. Dauphin Island Sea Lab, AL. *Dauphin Island Sea Lab's Discovery Hall Program Linking Research With K-12 Education.*

For the past 22 years the Discovery Hall Program has offered marine education programs to grades K-12. As a marine research institute, the Dauphin Island Sea Lab links current research programs to the K-12 curriculum. Scientists at the Sea Lab give talks to all grade level students and help in developing curriculum for use in the program. The Hall Program is based around hands on learning experiences. The Lab utilizes research vessel trips into the estuary as well as salt marsh excursions to help make a lasting impression. The yearn for knowledge about our oceans' crosses all age barriers, including an active elderhostel program. The growth in research and understanding of marine environments helps to stimulate students in science classes. Networking marine education and research programs with other NMEA members helps to keep this one of the best programs in the nation.

Rick Tinnin. University of Texas, Port Aransas. *Marine Field Experiences for Teachers and Students On the Texas Gulf Coast.*

For the past 19 years, the Marine Education Services (MES) program at the UT Marine Sciences Institute has offered field experiences to an average of 9,500 visiting school students each year. The core of the program is a 57' research vessel which serves as a floating classroom, providing hands-on experiences to over 5,000 students each year. The MES program also hosts 17 teacher workshops where over 800 classroom teachers interact with faculty and researchers at the marine lab. The teachers are then provided opportunities to incorporate current research into their classrooms through activities and curriculum development. The interdisciplinary nature of marine science crosses all subject boundaries and provides the perfect vehicle for an interdisciplinary course of study. The excitement and allure of the ocean captures the imagination and attention of teachers and students alike.

Sharon H. Walker. Gulf Coast Research Lab/Mississippi-Alabama Sea Grant, Ocean Springs, MS. *Project Marine Discovery—A Series of Exemplary Environmental Education Programs.*

Since 1987, Project Marine Discovery (PMD) has invited K-12 students to participate in interactive, hands-on experiences involving: horseshoe crabs; endangered species; marine and aquatic pollution; marshes, estuaries, and wetlands; deep-sea vents and benthic communities; fish biology; habitat loss; plant and animal diversity; oceanic profiles; conservation and preservation; and environmental stewardship. To further facilitate "bridging the gap" between research and the classroom, workshops and undergraduate/graduate courses are offered for preservice and inservice teachers. All of these programs occur at the Laboratory's J.L. Scott Marine Education Center and Aquarium in Biloxi, MS. The center has about 75,000 guests annually of which the PMD programs comprise 30,000 participants.

CONTRIBUTED PAPERS: *Programs That Bridge the Gap: Marine and Aquatic Science For Students and Adults.* **Robyn Dobyns,** *Tennessee Aquarium, Chattanooga, TN 37401 (615/265-0695).*

Charlene Dindo. Mobile Co. Public Schools, Dauphin Island, AL. *Kids, Crabs, and Cockle Shells: Hands-On Activities From Teaching Science in Grades K-4.*

During this overview of the Christa McAuliffe Fellowship project entitled "Kids, Crabs, and Cockle Shells," participants will see slides of developmentally appropriate activities for young children, teachers and parents which introduce them to Alabama's coastal

habitats. The project includes marshes, an estuary, Mobile Bay, seashores and the maritime forest. Activities incorporate math and science skills and concepts related to marine environments. Children count, group, graph, classify, measure, record, report, sort, label, examine and identify animals and plants that inhabit the coastline. These activities stimulate the understanding of science application anywhere. Discussion and handouts conclude the talk.

Brian Forist. Cape Cod Floating Classroom, Barnstable, MA. *Whales and Other Marine Life: Translating Science and Interpreting Research.*

This paper discusses the education focus of a whale watch and marine science program on Cape Cod waters. Rather than simply watching whales, the participants are provided with pre- and post-trip materials that complement the activities students engage in on board. By studying landforms and examining biological and water samples, students view the big picture, how whales and other marine life interact within their ecosystem. Programs are designed by dynamic and experienced educators in response to teacher needs and area curricular requirements. A focus is on techniques to translate science into English, interpreting research findings for visitors.

Steve H. Russell. Marine Option Program, University of Hawaii, Honolulu. *Experiential Opportunities in Maritime Archeology and History at the University of Hawaii.*

The University of Hawaii's Marine Option Program has, over the past six years, developed a field school training program in maritime archeology surveying techniques. The goals of the field school are to teach a strong conservation ethic in regards to submerged cultural resources and to provide basic training in skills (scientific diving, underwater and shoreline mapping and surveying and video and photo documentation) necessary to conduct non-invasive surveys of these resources. This paper will discuss the mechanics and accomplishments of the field school and the importance of incorporating maritime archeology and history into the marine curriculum at all training levels. It will also briefly discuss post-secondary academic opportunities and careers in maritime archeology.

Karen Blyler. Cooperative Extension, Washington State University, Puyallup. *The Homestead Assessment System: A Educational Tool To Help You Protect Your Drinking Water.*

In most rural areas of our country, well water is the major source for a homestead's drinking water. Thus, it makes sense to prevent contaminated groundwater from entering well areas. Home*A*Syst is a unique awareness-building tool that allows rural homestead owners an opportunity to assess how their homestead activities (water use, farm/home waste management, dangerous product storage, etc.) may be affecting their groundwater/drinking water quality. The program uses easy, step by step worksheets that allow the owner to rank these activities. Rankings identify any high risk activities for groundwater contamination and suggest action plans to correct the problems.

Robyn Dobyns. Tennessee Aquarium, Chattanooga. *The Tennessee Aquarium: a "Fresh" Look at Freshwater Habitats.*

Informal institutions translate science for the public. Get a "fresh" new perspective on the freshwater habitats of the Tennessee River. Follow the river from its origins as a small spring high in the Appalachian Mountains as it flows over hills and plains, creating habitats for various life forms. The Tennessee and Ohio Rivers flow into the mighty Mississippi River. Hundreds of miles downstream, great swamps are formed in the low lying Mississippi delta. As fresh water gives way to salt, the Gulf of Mexico is formed, teeming with life nurtured by the freshwater veins of the land.

Monday, August 8, afternoon

WORKSHOP: *MARE: A School-Wide, Interdisciplinary Ocean Studies Program, Using Marine Habitats to Bring to Life the Themes of Science.* **Roberta Dean**, *MARE, Lawrence Hall of Science, University of California, Berkeley, CA 94720 (510/642-5008).*

MARE is a school-wide, interdisciplinary ocean studies program which uses marine habitats to bring to life the themes of science described in Project 2061 and the California Science Framework. The program is appropriate for any school, inland or coastal and is currently being used system wide in Reno, NV. The MARE curriculum and inservices provide access to challenging science instruction for all students, including language minority students through hands-on sheltered instruction and cooperative learning techniques. MARE helps schools implement a year-long science curriculum which is articulated across subjects and grade levels. The year is highlighted at each school with a week-long Ocean Week celebration which includes special projects, guest speakers, field trips, and cross grade student peer teaching. MARE offers a residential Summer Institute, whole faculty inservices, and on-site support during Ocean Week. This workshop will include hands-on activities designed for use in ethnically and linguistically diverse classrooms.

WORKSHOP: *Fish Banks, Ltd., The Simulation That Changes the Way Your High School or College Students Think About Marine Resources, Economics and Group Problem Solving.* ***Karen Burnette-Kurie Institute for Policy and Social Science Research, University of New Hampshire, Durham 03824 (603/862-2186).***

Fish Banks, Ltd. is an engaging group simulation, assisted by one micro-computer, that illustrates the dynamics of renewable resource management. This interdisciplinary program enhances critical thinking, communication and group problem solving skills, reinforces the use of technology in teaching and conveys principles of economics and environmental science. Certified as an exemplary educational program by the US Department of Education, it is one of the National Diffusion Network's "Educational Programs that Work." Designed by Dr. Dennis Meadows for adult policy makers, Fish Banks, Ltd. is effective with high school and college students. It is used in 36 nations and all 50 states.

CONTRIBUTED PAPERS *Bridging The Gap—Improving Understanding of Science Through Teacher Education Programs and New Technological Applications.* **Joy Wolf**. *Sea World, San Diego, CA 92109 (619/226-3640).*

Lynda R. Flage, Eric Pyle, Jay Calkins and Steve Oliver. University of Georgia, Athens. Identifying key elements of a successful inservice teacher course: an evaluation of a two-week residential field course, *Using the Marine Environment for Integrating Math, Science, and Social Issues.*

We are desperately attempting to meet the outcry of equipping our science teachers while staying within the budgetary limits. One must ask "What makes a successful inservice teacher field study course?" The University of Georgia's Marine Extension Service at Skidaway Island has provided an Eisenhower supported two-week inservice teacher field course for the past six years. Analysis of pre-and post-test data, interviews of participants and course creators and various site visits resulted in the emergence of recurrent key components pointing to the success of this program.

Laurie E. Usher. Enviro-ed, Bainbridge Island, WA. *Wetlands Education—A Statewide Teacher Workshop Program in Washington.*

This four-year teacher workshop program has trained over 300 teachers; post-workshop evaluations indicate that wetland action projects are being conducted by 85% of the trained teachers.

Jan A. Hodges. Virginia Institute of Marine Science. Gloucester Point. *Oceanography Online: An Introduction to Educational Computer Networking.*

A brief introduction to educational computer networking with an emphasis on resources available to teachers through Internet. On-line databases, software, and information are available, but it takes time and effort to locate and retrieve them. The author is compiling a directory to these resources and a guide for accessing them.

SYMPOSIUM: *From Submersibles to Classrooms: Satellites, Downlinks, Science and You. Organized by Joy Wolf, Sea World, San Diego, CA 92109 (619 226-3540).*

Scott Stratton. Monterey Bay Aquarium, Monterey, CA. *Live from Monterey Canyon.*

This presentation will focus on various elements of *Live from Monterey Canyon*, a cooperative educational program supported by the Monterey Bay Aquarium and the Monterey Bay Aquarium Research Institute (MBARI). Live video from a remotely operated unmanned submersible operating deep in the Monterey submarine canyon is beamed via microwave from a research ship to the auditorium at the Monterey Bay Aquarium. Visitors have the opportunity to see these live images in addition to samples selected on request from over 180 still and video images cataloged on laser discs. An interpreter standing at the podium in front of an 8' by 10 ' screen selects images and fields questions from the audience. Real time radio communications with the scientists on board the research ship may also be incorporated into the program. *Live from Monterey Canyon* offers visitors firsthand experience with on going deep sea research being conducted by MBARI and the Monterey Bay Aquarium.

Joy Wolf. Sea World, San Diego, CA. *Shamu TV: Free Live Programs With Sea World Scientists and Veterinarians.*

Make the connection! Researchers need to be linked with students, providing role models, information and inspiration for science. To this end, Sea World provides free interactive television programs to schools nationwide. Scientists, animal care specialists and veterinarians share their love of science and animals in this monthly series designed to enhance science and career education.

Monday, August 8, evening

NMEA SEA SWAP AND SEA FARE

Meet with your fellow NMEA folks. Bring materials to trade, information to share or requests for help. Come find your friends and plan your social week.

Tuesday, August 9, morning

SYMPOSIUM: *Achieving Diversity: Marine and Environmental Education For Minorities and Women. Organized by* **Sharon H. Walker and Linda C. Skupien**, *Sea Grant Program, Gulf Coast Research Laboratory, Ocean Springs, MS 39566 (601/374-5550).*

David Lloyd Scott. Environmental Studies Center, Mobile Co. Public Schools, Mobile, AL. *A Wetlands Experience for Inner-City Elementary School Students.*

Mississippi-Alabama Sea Grant Consortium, in cooperation with Auburn University and the Alabama Sea Grant Extension Service, piloted a project to enhance the fourth grade science program in Mobile County's inner-city schools through field excursions. Students and teachers engaged in a "mini-course" on wetlands and marine life using the Environmental Studies Center's wetlands areas, wildlife exhibits and marine teaching aquarium. Teacher inservice, learning objectives, pre/post trip planning, field trip activities, resource materials and overall program evaluation will be discussed.

Terrence Seldon. National Sea Grant Program, Silver Spring, MD. *Reinvesting Marine Education Dividends.*

At age 13, this presenter and his young friends were introduced to SCUBA diving by a member of the National Association of Black SCUBA Divers. That experience provided positive role models who became extended family, reinforcing values learned at home. That experience also provided the foundation for a continuing quest to broaden minorities' knowledge of potential careers in the sciences. This presentation provides an overview of experiences in organizing programs—through both professional and personal support—that foster marine and environmental science education for children.

Sharon H. Walker and Lundie Spence. Sea Grant Programs, Gulf Coast Research Laboratory, Ocean Springs, MS and North Carolina State University, Raleigh, NC. *Operation Pathfinder: An Introduction To Oceanography and Coastal Processes For Elementary and Middle School Teachers.*

A network of Sea Grant educators has developed a program to increase the awareness and understanding of oceanography and coastal processes, as well as improve teaching techniques, among elementary and middle school teachers who teach predominately minority students. The three semester hour, gradu-

ate course occurs in six regions with a maximum of 20 students per region. Participants are selected by NMEA chapters. At the completion of the course, they have the lesson plans, staff development programs and resource materials developed for their grade level.

Margaret Howell. J. L. Scott Marine Education Center, Ocean Springs, MS. *Minority Math: Multiplying Resources for Minority Marine Education.*

A variety of sponsoring agencies and institutions with established marine and environmental science programs joined forces in 1992 and 1993 to pilot a program through which older minority students served as mentors for younger ones. This presentation outlines the program, some pitfalls to avoid and the benefits observed in mentors and younger students. Sponsors included the Mississippi-Alabama Sea Grant Consortium, the Gulf Coast research Laboratory, the University of West Florida and the YMCA.

Wilda Pounds, Tammy Mauney and Linda Clifton. Booneville High School, Booneville, MS. *Project TACO: Take a Class Outdoors.*

The lower percentages of women in the fields of math and science can be traced back to early education. The educational system tends to push young women into traditional roles while encouraging their male counterparts to become engineers, marine scientists or computer specialists. This presentation will show how one north Mississippi school, with the help of the Mississippi-Alabama Sea Grant Consortium and the Gulf Coast Research Laboratory, has successfully used experiences in marine and environmental science to encourage women to take higher level science courses and consider science-related careers.

WORKSHOP: *Something Fishy: Teaching Methods and Materials For a Successful Unit About Fish For Grades 4-6.* **Casey Harrison, Dana Roberts and John Diplacido.** *Discovery Hall Program, Dauphin Island Sea Lab, Dauphin Island, AL 36528 (205/861-2141).*

An exciting assortment of teaching tools for a fourth through sixth grade marine biology unit. Participants will take a fast, full swim through a fish's world via hands-on activities and dynamic visual aids and hand outs. Activities will include: developing dichotomous keys for classroom use, an edible lab with shark and flounder, Hide and Protect, face painting, and "everything you always wanted to know about a fish but were afraid to ask." Materials will include: stencil patterns, fish recipes, game suggestions, small aquaria instructions, fish poster suggestions, hints for microscope use, resource lists and more. Fish are fun! Come see and do!

WORKSHOP: *Fish Banks, Ltd., The Simulation That Changes the Way Your High School and College Students Think About Marine Resources, Economics and Group Problem Solving.* **Karen Burnette-Kurie.**

See Monday afternoon listings for full description.

Tuesday, August 9, afternoon

SYMPOSIUM: *Coastal Hard Bottom Communities: A New Look. Organized by* **John Dindo**, *Dauphin Island Sea Lab, Dauphin Island, AL 36528 (205/861-2141).*

Lundie Spence. Sea Grant Program, North Carolina State University, Raleigh. *Undersea Oases: the Science of North Carolina Hard Bottoms.*

The North Carolina continental shelf ecological and geochemical investigations focus on the reasons for high productivity and nutrient fluxes at or near geological outcrops, known as hard bottoms. Added to a major research grant were educational development funds to produce a video to bring results to the public sector, particularly in school science courses. Discussion, the video and related activities will be presented.

Bill Hastie. Oregon Dept. of Fish and Wildlife, Newport. *Oregon's Reefs.*

Looking west from coastal Oregon, the Pacific Ocean conceals the nature of the continental shelf. Most visualize it as a flat slope, eventually dropping off to the deep ocean. But, if the water is removed, a myriad of rocky reefs and pinnacles fills the "landscape." The significance of these reefs to the public and the research surrounding them is communicated to Oregonians through education efforts at many levels. This session looks at the research and how it is being used in Oregon schools.

John Dindo. Dauphin Island Sea Lab, Dauphin Island, AL. *Hard Bottom Communities off Alabama With A Deep Dive to the Methane Seeps.*

In 1988 local shrimpers were curious about rocks that they were catching in their trawls. They brought them to the Dauphin Island Sea Lab and, from that initial contact, a research investigation led us to the examination of low profile hardbottom areas off the Alabama coast. Oxygen and carbon dating revealed the rocks to range from 18,000 - 30,000 years old. This corresponded to changes in sea level and depicted the extent of the Florida Panhandle and Alabama coasts. Associated with these hardbottoms are soft corals (gorgonians) which enhance the reef type community. Our research efforts extended out onto the shelf in deeper water and required the use of a manned submersible. With this capability, we were able to examine reef structures and dive to an offshore methane seep at 2,000 ft.

CONTRIBUTED PAPERS: *Achieving Diversity: Marine and Aquatic Education Programs. Sylvia M. James, National Aquarium in Baltimore, MD 21202 (410/576-3875).*

Valerie Chase. National Aquarium in Baltimore, MD. *Education Programs in Cooperation With a Large Urban School District, Including Teacher Inservice Funded by Howard Hughes Medical Institute.*

Learn how one public aquarium works with its community schools in an effort to improve science education in a large urban district with a particular emphasis on teacher education and curriculum development support. Included will be a consideration of funding sources that have enhanced the cooperation possible.

Rod H. Sproatt and Anne Lindsay. University of South Carolina, Beaufort. *The Effect of Summer Experiential Marine Science Programs on Science Interests of At-Risk Minority Youth.*

Twenty-six minority students in grades 4-8 from St. Helena Island, SC took part in two one-week science camps providing hands-on activities in barrier island settings. Students were identified as at-risk for dropping out of school based on the Beaufort County school district profile for potential drop outs. Participants

were pre- and post-tested for science knowledge and attitudes toward science activities. Results of the post-test indicated a significant positive attitudinal change toward science activities at the end of each camp. Follow up of student participation in school science activities is ongoing. Funded by South Carolina Sea Grant.

Sylvia M. James. National Aquarium in Baltimore, MD. *Junior Aquarist Summer Camp for Minority Youth.*

The Junior Aquarist Summer Science Camp program funded by the National Science Foundation is a unique opportunity for minority students to get an introduction to science and its applications in the real world. Students in grades 7-9 who reside in Baltimore City or County have instruction in marine and aquatic science, conduct hands-on research projects and explore career strategies in this four week program. Additionally, the program is designed to encourage the Junior Aquarists to continue their interest and involvement in the sciences through various student opportunities at the National Aquarium in Baltimore.

WORKSHOP: *MARE: A School-Wide, Interdisciplinary Ocean Studies Program, Using Marine Habitats To Bring To Life The Themes of Science.* **Roberta Dean**.

See Monday afternoon listings for full description.

DISCUSSION: *Achieving Diversity: Reaching Out To Diverse Audiences the Challenge of Aquarium, Zoo and Museum Programming.* **Pat Rutowski and Jordan O'Rylee**. *Monterey Bay Aquarium, Monterey, CA 93940 (408/648-4858).*

How do we get the messages of our organizations out to diverse audiences? Participants will be asked to share elements of their outreach programs, discuss the particular challenges to set up programs serving diverse populations and how to succeed in these efforts. People with existing programs are encouraged to bring their educational materials to hand out.

SYMPOSIUM: *Presenting the Gulf of Maine: Deep Blues To A Greener Future? Organized by:* **Jeanne Meggison**, *Gulf of Maine Marine Education Association, Kennebunk, ME 04043 (207/499-2445).*

Jeanne Meggison and Jeff Sandler. Outreach specialist, Kennebunk, ME and Mr. and Mrs. Fish, South Portland, ME. *From Space to Our Own Backyards: Traveling With Water Through the Gulf of Maine Watershed.*

This presentation is a multimedia-media introduction to the Gulf of Maine symposium. The intricate relationship between our own life cycles and water will be explained utilizing satellite and GIS images, interspersed with images of people, places and the wildness of this unique area. The text combines excerpts from the writings of Jacques Cousteau and the words of Chief Seattle with definitions from present day environmentalists to inform and inspire participants towards affirmative global action and education.

Dean Meggison. Kennebunk High School, ME. *The Dynamics and Physiology of the Gulf of Maine.*

The Gulf of Maine is described as a "sea beside a sea;" as separate from the Atlantic Ocean as the Mediterranean Sea. The causes and effects of this separation are explored in this paper utilizing classroom activities regarding currents, bottom topography, tides, beach processes and sea level rise. Handouts and resource lists will be provided.

Susan Sedenka. Narragansett Elementary School, Gorham, ME. *Hands-On Watershed and Wetlands Education in Maine.*

Teaching about watersheds and wetlands can be the ultimate challenge for the elementary teacher. This paper will demonstrate simple and inexpensive hands-on interdisciplinary Gulf of Maine education techniques for the classroom. The majority of this information is easily converted to any classroom, anywhere. Handouts and resource lists provided.

Ann Reid. Sea Grant Program, University of New Hampshire, Durham. *Getting Students and the Community Involved in a Monitoring Project.*

This paper will demonstrate the ease of water quality testing with equipment now available for the classroom. Getting students at all levels and the community at large "turned on" to water quality by a hands-on participatory approach to education encourages participants to "think globally and act locally" in accepting stewardship as a role for themselves in their own backyards.

Tuesday, August 9, evening

NMEA board planning meeting including new board members

Ecological Society of America Awards and Past President's Address By Dr. Jane Lubchenco, Marine Ecologist, Oregon State University

Dr. Lubchenco gave the very popular video tape address for 1992 NMEA meeting in Oregon and invited us to hear her in person this year.

Wednesday, August 10, morning

SYMPOSIUM: *Communicating the Science, the Issues and the Importance of Global Change. Organized by* **Vicki Clark and Lee Larkin**. *Sea Grant Program, Virginia Institute of Marine Science, Gloucester Point, 23062 (804/642-7169).*

Lynn Mortensen. Project Earthlink, Global Change Program, Arlington, VA. Global Change National Education Initiatives.

Participants will explore the potential linkages among marine education and national education initiatives on global change. Curriculum materials, training programs, Internet usage, and satellite teleconferencing will all be discussed. Special activities in celebration of the 25th anniversary of Earth Day in 1995 are being planned by the thirteen federal agencies of Project Earthlink and Earth Day USA.

Sharon Meeker and Gail Shelton. Maine/New Hampshire Sea Grant Program, Durham, NH and Gulf of Maine Marine Education Association. *Getting Connected.*

Studying global change makes us all realize the interconnections which exist among global change issues. Come and play global change games and experience the networks of issues that global changes are generating. A set of global

change games will be available for participants to take home.

Lyle Soniat. Sea Grant Program, Louisiana State University, Baton Rouge. *Project TELLUS: Interpretive Videos for Middle School Science.*

This session will describe a materials development project recently funded by the National Science Foundation. Project TELLUS is a series of video lessons designed for middle school audiences. Five of the six interactive programs cover global change topics related to the states bordering the Gulf of Mexico. The sixth program covers the scientific process or the nature of scientific inquiry. The five topics include exotics, biodiversity, water quality/pollution, climate change and population. These interdisciplinary programs will include elements of physical, earth and life science. Each video lesson will integrate an activity that will involve the audience.

Vicki Osis. Sea Grant Program, Hatfield Marine Science Center, Oregon State University, Newport. *Global Change Hands-On Activities.*

This session will present an introduction to global change curriculum with emphasis on global warming and population growth activities. Samples of curriculum materials and demonstrations of the activities used during the National Science Foundation/Oregon Sea Grant funded workshop for middle school teachers will be presented.

Roseanne Fortner, and Victor J. Mayer. Ohio State University, Columbus. *Global Change in the Secondary Curriculum: An Earth Systems Approach.*

Where does global change fit into the precollege curriculum? Using an Earth Systems approach to the teaching of science offers numerous infusion opportunities. Current efforts at science curriculum restructuring indicate this approach may be an answer to needs for relevance and renewed interest in science. The National Science Foundation has supported curriculum development efforts that resulted in the production of "Activities for the Changing Earth System," a book of 20 classroom-ready activities for middle and high school science. This session will highlight the topics and approaches developed in this book.

Harriet Stubbs. North Carolina State University, Raleigh. *Scientist-Teacher Interactions on Global Change.*

This presentation will feature examples of hands-on activities designed to be infused into established curricula in grades 4-12. Based in current scientific research, the activities were developed by teachers and reviewed by scientists, educators and students.

Michael S. Spranger. Sea Grant Program, University of Washington, Seattle. *Leopold, Global Environmental Ethics and A Call to Arms to the Education Community.*

This discussion will focus on the development of global environmental education programs which attempt to bring the concept of "thinking globally, acting locally" into the classroom and workplace. Aldo Leopold has been recognized as being first in Western intellectual history to advocate broad ethical responsibility and action toward the human and nonhuman natural world. This presentation will use observations from Leopold's classic *Sand Country Almanac* and modern-day contemporaries in challenging educators to cultivate a global, ecological conscience in students, colleagues and friends. The session will include examples of activities and interactive discussion.

WORKSHOP: *Living in Water: An Interdisciplinary Science Curriculum For Grades 4-7.* **Martha Nichols**. *National Aquarium in Baltimore, MD 21202 (410/576-3849).*

Living in Water is a set of thirty-six, hands-on science activities that encourage students to explore science processes. In this workshop, sample activities suitable from one class period or less that can be used no matter where you teach. Collect, organize and interpret data as we test the physical properties of fresh and salt water and examine how these properties affect organisms and habitats. Come prepared to get a little wet and walk away with copies of selected activities.

WORKSHOP: *Saving the Sea: How teachers and Scientists Can Contribute to Marine Conservation in the Classroom From Middle Schools to Colleges. Alison D. Merow.*

See Monday morning listings for full description.

Wednesday, August 10, p.m.

SYMPOSIUM: *Non-Point Water Pollution Study of Wildcat Creek, A Tributary of the Kansas River, funded by EPA and KDHE and done by Manhattan High School independent study students. Organized and presented by Dru Clark and her students. Manhattan High School, Manhattan, KS 66502 (913/587-2100).*

This symposium will present the actual work of high school students, presented by the students and their instructor. The program will be broken down into the following parts:

The genesis of the program: an EPA-funded and KDHE-administered program designed for high school students to collect and analyze data regarding water quality. It allows teachers to evaluate students through performance criteria designed beforehand and shared with the students who are doing independent study/research, not a regularly scheduled class, the ten parameters will be discussed and compared with a more traditional grading system, and examples will be given to show stumbling blocks as well as effectiveness in this approach to learning.

Use of instruments, equipment and measurements: Chemical analysis of water using a spectrophotometer, conductivity meter, digital titrator and pH meter. Velocity measurements and biological sampling. Determination of landuse of the watershed of the creek by use of a grid and aerial photographs.

Data collection, storage, manipulation and interpretation: use of computers and special programs to manipulate data. The annual report, emphasizing graphs that will compare and contrast data based on season, temperature, water volume (especially before and after the Flood of '93) and site differences.

Advertising creeks to the public: discussions on conveying earth wise messages to the community: elementary students to adults. Water conservation, respect of riparian habitat, riparian biology, effects of human development on creeks, the Flood of 1993s impact on creeks of the Kansas prairie, and other creek-related topics. Ideas will be given on methods of arousing public awareness.

SYMPOSIUM: *Writing for Publication In Marine Science and Maritime Studies. Organized by* **WM. Ray Heitzmann**. *Villanova University, Villanova, PA 19085 (610/519-4618).*

A step-by-step (from idea to submission) approach to manuscript construction and publication. The presentation will focus on generating manuscript ideas, locating outlets, query letters, manuscript format, working with editors. Examples of various types of professional, technical and scholarly publications will be used to illustrate the writing/publishing process.

Nora Deans. Monterey Bay Aquarium, Monterey, CA. *Writing For Publication: the* Current *Editor's Perspective.*

Participants will gain an insight to the publication process from an editorial perspective. While comments will be made relative to book publishing, this session will focus largely upon writing and publishing issues related to *Current: The Journal of Marine Education*. Specifically, it will focus upon ideas for articles, manuscript style and submission procedures, including some "Do's and Don'ts" in working with editors.

Edward Rock. Scott Foresman Publications, Glenville, IL. *Textbook Writing in Science and Marine Science.*

This presentation will focus upon the textbook publishing business from obtaining a position as a reviewer through collaboration to publication. A detailed discussion of what textbook publishers look for in a book proposal and an author will be covered. The role of finances, adoption procedures, editor-author relationships, royalties, types of textbooks, and related issues will be discussed.

Thomas Greene. Fort Hamilton High School, Brooklyn, NY. *The Case Study of a Marine Science Textbook Author.*

The struggle of textbook writing will be chronicled. Problems of locating a publisher, working with co-authors, meeting deadlines, writing at an audiences level, and related topics will be discussed. The speaker's story will motivate prospective authors while alerting them to potential pitfalls.

CONTRIBUTED PAPERS: *Marine Education.* **John Trowbridge**. *Louisiana State University, Baton Rouge, 70803 (504/383-9854).*

Howard D. Walters. Gulf Coast Research Laboratory, Ocean Springs, MS. *The Use of Qualitative Data in Program Evaluation For Marine and Global Science Education.*

The Gulf Coast Research Laboratory implements a number of nationally recognized educational programs in marine and global science. Efforts have been undertaken to more fully assess the short and long-term impact of these programs, utilizing qualitative data sources. Quantitative data have been utilized substantially in program evaluation, monitoring, and planning since 1987, but it is believed that a complementary picture of program impact can be developed from qualitative sources, particularly in a multiple-program education center.

John Trowbridge. Louisiana State University, Baton Rouge. *Gulf literacy: A Marine Science-Based Model of Scientific Literacy.*

A well-established trend in science education reform is the move towards the goal of science literacy as evidence by Project 2061. Attributes of science literacy include: understanding key concepts and principles of science and understanding newspaper articles and graphics

Joyce Roberts, Margaret Howell and Robin Berry. J.L. Scott Marine Science Center and Aquarium, Ocean Springs, MS. AA *(Aches to Applause) For Marine Outreach Educators - We Deliver Too!*

The key to wise marine, aquatic and land stewardship comes from education. To effectively reach audiences regionally, often creatures and educators from watery and dry environments must go inland - into classrooms. The logistics of such a program can be a nightmare or a wonderful dream, ending in staff death or elation. Learn firsthand what it takes to make this type of education program a success for all involved.

Melinda Fry. Tennessee Aquarium, Chattanooga. *Can't Touch This: A Discussion of The Utilization of Live Specimens In Education.*

Through slides and live animal presentations get one educator's perspective of acquisition, maintenance and use of live specimens in an education department.

Vicki Clark. Sea Grant Program, Virginia Institute of Marine Science, Gloucester. *Can We Stop the Zebra Mussel?*

The zebra mussel is one of many exotic species threatening the integrity of ecosystems in the United States. Even though these species cost billions of dollars to human health, agriculture and industry, information on exotics does not appear in many science curricula. This session will present curriculum materials designed to introduce students in grades 8-12 to the zebra mussel and other exotic species. Problem solving activities using current scientific research data will be demonstrated. Participants will receive a copy of the teacher resource packet.

Eleanor Abrams. Louisiana State University, Baton Rouge. *Can Life Survive Without the Sun: High School Students Comparing Photosynthesis and Chemosynthesis.*

Although green plants utilize the sun's energy, most organisms depend on a continuous external supply of energy-rich organic molecules. Chemosynthesis might have been a major pathway for supplying that organic richness in the early days of life on earth. The comparison of photosynthesis and chemosynthesis provides a conceptual linkage for high school biology students to understand that energy is a primary requirement of life. A slide presentation and hands-on activity will contrast energy-fixing cycles of these very different producers. This paper will focus on photosynthesis, chemosynthesis, energy capture and transfer, and the cycling of matter.

Lundie Spence. Sea Grant Program, North Carolina State University, Raleigh. *The Death of a Whale: What Can We Learn?*

Marine debris is not only an aesthetic problem for recreational beaches, but can be a lethal issue for marine animals. December, 1992, a juvenile female sperm whale washed ashore on Wrightsville Beach, NC. During the necropsy, the stomach contents revealed

an assortment of plastics from a bleach bottle to 30 feet of polypropylene line. The death of this marine mammal was attributed to malnutrition. While zoologists have proposed some new ideas about the eating habitats of young sperm whales from this death, educators decided to use the incident to provide some lessons in conservation. This session will show the 1994 17-minute video with footage from the necropsy and interviews with educators and the Marine Mammal Stranding Network and provide an educational strategy for using this in the classroom.

NMEA board auction work session

Wednesday, August 11, evening

Mr. and Mrs. Fish show and NMEA Annual Auction

Thursday, August 11, *morning*

National Sea Grant Educators meeting

Thursday, August 11, afternoon

NMEA annual awards ceremony: Tennessee Aquarium auditorium

Thursday, August 11, evening

Tennessee Aquarium education programs sampler

NMEA dinner and tour Tennessee Aquarium

Call for Auction Items

We hope to make this the best NMEA auction ever! We have an opportunity this year to reach out and share the NMEA spirit with other societies. Mr. Fish and our beloved, well-traveled Pike work hard to support NMEA during this annual fund-raising gala. We can all aid their efforts by bringing items for the auction. Auction items must be delivered to the NMEA conference headquarters by Tuesday afternoon, August 9.

Share the National Marine Educators Association!

Membership benefits include subscriptions to *NMEA News*; and *Current: The Journal of Marine Education*; and discounts on annual conference registration fees.

Note: New prices effective January 1, 1994!

STUDENT—Any fulltime student. 1 year—$20

ACTIVE — Any person who supports NMEA. 1 year—$40 2 years—$78; 3 years—$118

CHAPTER AFFILIATE —Any person who is a national and a chapter member. 1 year—$35; 2 years—$68, 3 years—$103

FAMILY—Family members (receive one copy of mailings). 1 year—$65

ASSOCIATE—Any person providing additional support to NMEA. 1 year—$55

SUSTAINING—Any person providing substantial support to NMEA. 1 year—$100 or more

LIFE—Any individual who wishes to join as an active member for life. $500 or more

PATRON—A special category for those able to advance the goals of NMEA in a substantive manner. $700 or more

INSTITUTIONAL—Libraries and other nonprofit local, state, or regional scientific or educational organizations. 1 year—$40

CORPORATE—Any company, corporation or organization whose business includes the marine education market. $250 or more

MEMBERSHIP CATEGORY

NAME

ADDRESS

CITY / STATE / ZIP

TITLE / OCCUPATION

New membership ____ Renewal ____

Do you currently belong to a regional chapter? __ yes no __

If yes, which one? _____

Please make check payable to NMEA and mail with this form to: NMEA, P.O. Box 51213, Pacific Grove, CA 93950
Foreign memberships: please add $5.00 U.S.

FROM THE SHALLOWS...

by Deb Coulombe

Please send us information about what you or other NMEA folks have been up to, professionally and personally. Have you switched jobs? Received a grant? Organized a trip? Had a manuscript published? Finished a degree? Taken a cruise? Gotten married? Had a baby? We want to hear about it!! Send your news to ***Deb Coulombe, NMEA, PO Box 51215, Pacific Grove, CA 93950 or fax it to (408) 372-8471****. Please include your name, address and phone.*

First...some clarifications about items in our last column with apologies from your columnist!

Mark Shilling reported on the widespread use of *WOW! Wonders of Wetlands*, but I neglected to mention that "WOW!" is the wonderful work of **Britt Slattery** of the US Fish and Wildlife Service. Britt had her second child, Patrick Henry Slattery on April 8, 1994.

And now new news from our readers...

Steven A. Melcher writes to say he has completed the Water Quality Manual for the state of Delaware. He retired from teaching (an indefinite sabbatical) and moved from Delaware to...brr 27 degrees...upstate New York. He spent last summer exploring Lake Ontario in his new sailboat and was active with the Great Lakes Initiative. A computer network was set up linking everyone involved. Steven is also on the education board of the Senaca Park Zoo where the theme for the new Children's Zoo is "Rivers of the World." Between trips to England, Belize, Guatemala, Russia and Lindyhurst, NJ Steven has been teaching an oceanography course, looking into adopting a child from Russia, taking African drumming, ballroom dancing and putting together a new tape, too! Steven, who reports he is still not married, now lives at 43 Reservoir Avenue, Rochester, NY 14620-2726, 716-256-3928, Internet svaap3@aol.com.

Rhet Wilson of the South Carolina Aquarium sent in these items about folks in her area...

Cindy Renkas of Mason Prep School in Charleston, SC was nominated Teacher of the Year for the South Carolina Private School Association and was also the SCMEA 1993 Marine Educator of the Year. **Stan Rachelson** of Columbia, SC and **Paula Keener-Chavis** of Charleston, SC were both selected directors of regional math and science "HUB's" funded by NSF and SC Department of Education for math and science improvement. **Bruce Lampright** of Spring Island, SC was named Industry Development Conservationist for 1993 by the SC Wildlife Federation. Congratulations to all these fine South Carolina folks!

Meanwhile in Georgia, **Trish Hembree**, a teacher at Paideia School in Atlanta has been elected the new president of GAME! Leaving the position of President to **Donna Stewart** of the Jekyll Island 4H Center who recently traveled to upstate New York to accept the "Alumnus of the Year" award from the Conservation Department of the Finger Lakes Community College.

Peg Collins of MME reports that **David Donna** (MME) of Milton High School in Milton, MA took his students on Enviro-Lab out into Boston Harbor. They did an otter trawl during which David warned them that they would unfortunately see no cod—guess what—TWO GREAT BIG CODS! Boston Harbor is alive and well but don't ask about the water and sewer bills!

Peg also reports that **Linda MacIntosh** (MME) of the Dana Hall School in Wellesley, MA has a new baby boy and that **George Duane** (MME) has been inducted into the Massachusetts Science Educators Hall of Fame—an honor greatly deserved. (I had the chance to speak to students in George's marine science class in the fall and I must agree! DC)

Cathi DeLisle of SENEME and the Mystic Marinelife Aquarium wrote that, in collaboration with three other museums in Connecticut, they are working on an exciting and challenging program called "The Connecticut Museum Collaborative for Science Education." This three year program for teachers and middle school students is funded by NSF. Also...in June a new exhibit, "Conservation Information Center" opened at the Mystic Marinelife Aquarium. Volunteer's present programs and provide information about Long Island Sound to aquarium visitors.

Several resources reported on the media blitz involving **Bill Hastie** of Oregon Fish and Wildlife...Bill, while in Victoria, BC last summer was in front of the Parliament Building as part of a protest over logging. A news team saw Bill with an Oregon NMEA sweatshirt (they were very hot items at the Oregon meeting in 1992!) and ran to ask him his opinion of logging in the US. Bill, being the media-shy guy we all know him to be, grabbed the mike and gave them a full review of US logging and how it has devastated the Oregon mountains. Hopefully the state of Oregon was not tuned to Canadian TV that weekend. Photographs will be available. Contact John Dindo.

Sylvia James of the National Aquarium in Baltimore received a Howard Hughes Medical Institute grant for five years of teacher inservice for Baltimore City Public Schools and NSF grant for summer science camps for middle school minority students!

Ginger Hinchcliff, Education Coordinator at Rookery Bay National Estuarine Research Reserve in Naples, FL. was selected as the educator to serve on the external review committee for the National Sea Grant College Program. Findings of the committee are expected out sometime this summer. Ginger and **Tom Fish**, Information Specialist at Rookery Bay, recently attended the Governor's Environmental Education Awards ceremony in Orlando, FL. There they learned that Rookery Bay N.E.R.R. had won the award for overall excellence in the Government category. Congratulations!

Seacamp Association, Inc. of Big Pine Key, FL (which includes NMEA members **Irene Hooper** and **John Booker**) will be leading the first Russian Seacamp Expedition in July. Fourteen former campers and several Seacamp staff, accompanied by Russian camp staff,

teachers and scientists, will explore the culture, history and ecology of the country through a boat tour on the Volga River and a stay at a Russian summer camp.

Jeff Sandler, (the *Mr.* half of *Mr. and Mrs. Fish*) called with news that he had just returned from a fabulous trip to Japan where he was the guest of the governor of the northern Japanese state of Aomori. The purpose was to help Aomori and Maine become sister states. Jeff has been studying Japanese for five years and is the President of the Japan America Society of America. His Japanese came in handy in Shinagawa, Japan (Portland, Maine's sister city) when he gave a speech in JAPANESE(!!!) before the legislature. When asked if the audience looked perplexed or intrigued, Jeff replied that people came up to him afterward and wanted to know more about the "warthog in the bathroom!" Those that did understand the speech gave him a standing ovation! To see Mr. Fish for yourself, in English, be sure to attend the auction at our summer conference in Tennessee. Jeff, once again, will be the auctioneer. Thanks, Jeff!

Your columnist, **Deb Coulombe**, was invited to sign copies of her book, *The Seaside Naturalist*, in Chicago at the Shedd Aquarium's Member's Night, May 18. Laura Jenkins of the Shedd's library arranged the signing which was great fun! I heard wonderful things about the aquarium's new director, Ted Beattie. Everyone I spoke with was very excited about his ideas and his vision for the aquarium's future, especially with regards to teacher education. Please remember to send me your best, easiest marine science teaching hints for my new book *Oceans of Ideas*. My address: 13 Woodridge Rd., Holden, MA 01520. 508-829-2167 FAX 509-829-7893. One last thing...I will be running the auction at this year's conference in Tennessee and am asking everyone to bring a couple auction items along with them.

Thanks!

CHAPTER NEWS

ANNOUNCING A NEW CHAPTER!

Tennessee is forming a state chapter of NMEA and is in the beginning stages of organization. The state has been separated into three distinct regions each with a representative that will promote the chapter and facilitate the organization of meetings and future plans. The region representative from the western portion is Dr. Winfred Smith from the University of Tennessee, representing middle Tennessee is Dr. Padgett Kelly, and the eastern representative is Robyn Dobyns from the Tennessee Aquarium. Any comments or suggestions, please call Robyn Dobyns at 615-265-0695.

GULF OF MAINE

Join us June 4 for GOMEA Day at the Great Bay National Estuarine Research Reserve in NH. On August 7-11, a two-hour symposium will be presented at the NMEA conference in TN on our threatened ecosystem, The Gulf of ME. GOMEA's annual conference will be at the Maine Maritime Academy in Castine, ME on October 22. Richard Wheeler of the *Great Auk Voyage* fame will be a featured speaker. Contact a board member or Linda and Barry Kilch. Our chapter is also working on a curriculum packet, networking with other organizations and organizing and connecting resource centers in the Gulf of ME area. Congratulations to Mary Cerullo. Her book *Sharks, Challengers of the Deep* was chosen as an outstanding science trade book of 1994 by NSTA and the Children's Books Council. For more information about GOMMEA, contact Jeanne Meggison, RR1, Box 2409, Kennebunk, ME 04043.

MASSACHUSETTS

Peg Collins, President and Jack Crowley, Executive Director, along with other board members of MME have been actively networking with other organizations in MA and New England to develop curricula, hold workshops and teach teachers about marine studies. Michael Williamson, a MME member is again offering a summer marine science program, *Marine Science, A Special Course for Teachers* August 1-12. For more information contact Michael Williamson at Wheelock College (617)-734-5200x256 or (508) 468-4699. For more information about MME, contact Peg Collins, 12 Lyne Road, Brighton, MA 02135.

MID-ATLANTIC

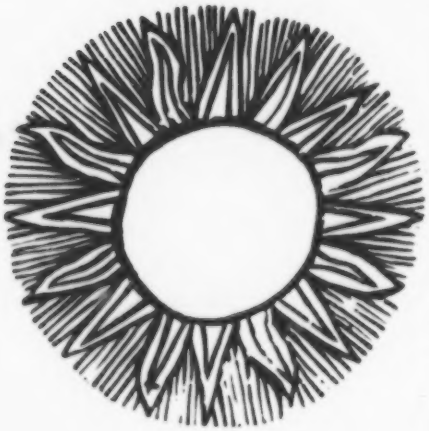
MAMEA invites you to their 1994 conference October 21-22 in Chincoteague, VA. Contact President-elect, Jan Hodges at 804-642-7171 for more information. Karen Aspinwall MAMEA member recently published an activity book, *The Down By The Sea Activity Book* to promote understanding and conservation of marine habitats and sealife. Contact Karen Aspinwall, The Cattail Co., 88 Green Meadow Dr., Elkton, MD 21921 for more information. Vicki Osis, past-president of NMEA will be leading a group of marine educators to Australia September 16-October 5. For more information call (503) 867-0257. Congratulations to Pamela Hensley and Terri Kirby who were recognized as Outstanding Classroom Teacher and Outstanding Non-Traditional Educator, respectively at MAMEA's 1993 fall conference. This summer workshops sponsored by MAMEA and organized by each MAMEA state representative will be offered to promote marine education and recruit new members. For more information about MAMEA, contact Joanne Powell, North Carolina Maritime Museum, 315 Front St., Beaufort, NC 28516.

NEW YORK

In January, we welcomed Bruce Carlsten and Susan Chelsea as co-chairs of NYSMEA. For more information about NYSMEA, contact E. Bruce Carlsten, 35 Sanford St. Rye, NY 10580 or Susan Chiesa, One Celestial Ln., Levittown, NY 11756.

SOUTHWEST

The 1995 conference will be in Santa Barbara on January 14. SWMEA has chartered a boat and the activities will include whale watching, birding, a visit to the Channel Islands, hiking and many other fun opportunities. Please call Joy Wolf at 619-226-3640 for more information about the conference. For more information about SWMEA, contact Diane Sweeney, 4467 Saratoga Ave., San Diego, CA 92107.



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Editors: Michael Rigsby, Lisa Tooker

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